



## **Title: Investigations in Patient of Fever – A Stepwise Clinical Guide**

### **◆ 1. Introduction**

Fever is one of the most common presenting complaints in clinical practice. It serves as an indicator of an underlying pathology—ranging from trivial to life-threatening. This eBook aims to guide clinicians in systematically investigating a patient presenting with fever. It balances the need for timely diagnosis with the risk of over-investigation, emphasizing a stepwise approach.

### **◆ 2. Understanding Fever**

#### **◆ Definition:**

Fever is defined as a temporary elevation in body temperature, often due to an increase in the body's thermoregulatory set-point, usually in response to infection or inflammation.

#### **◆ Classification of Fever Patterns:**

**Acute: <7 days (e.g., dengue, viral illness)**

**Subacute: 1–2 weeks (e.g., enteric fever)**

**Chronic: >2 weeks (e.g., tuberculosis, malignancy)**

**Intermittent: Spikes separated by return to normal (e.g., malaria)**

**Remittent: Fluctuating without returning to normal (e.g., infective endocarditis)**

**Relapsing: Fever-free intervals between episodes (e.g., Borrelia)**

### **◆ 3. Clinical Evaluation**

#### **◆ History:**

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Duration and pattern of fever

Associated symptoms: chills, rigors, sweating, headache, rash, diarrhea, cough

Past illnesses, immunization status

Travel history (endemic areas)

Exposure to animals, insect bites, or sick contacts

Drug history and allergies

## ◆ **Physical Examination:**

**Vital signs, hydration status**

**Skin: rash, petechiae, ulcers**

**Lymph nodes: enlargement, tenderness**

**Abdomen: hepatosplenomegaly**

**Respiratory system: crepitations, dullness**

**Neurological status: sensorium, neck stiffness**

## ◆ **4. Stepwise Investigations**

### **First-line (Basic Screening Tests):**

Recommended in most patients presenting with fever:

Complete Blood Count (CBC) – leukocytosis, leukopenia, thrombocytopenia

Erythrocyte Sedimentation Rate (ESR) / C-Reactive Protein (CRP) – inflammation markers

Peripheral Blood Smear – for malaria, hemoparasites, atypical cells

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Urine Routine & Microscopy – look for pyuria, proteinuria, casts

Chest X-ray – rule out pneumonia, TB

Dengue NS1 / IgM, Malaria Antigen Test or smear – in endemic areas

## **Second-line (Targeted Tests):**

Based on clinical suspicion:

Liver Function Tests (LFTs) – raised in viral hepatitis, dengue, enteric fever

Renal Function Tests (RFTs) – uremia, leptospirosis

Blood cultures – especially in suspected enteric or bacterial sepsis

Widal test / Typhidot – in suspected typhoid

Sputum AFB / CBNAAT – for pulmonary TB

Urine Culture – for UTI with fever

Serologies – leptospira, scrub typhus, brucella, chikungunya

## **Third-line (Advanced / Specialized Tests):**

When initial workup is inconclusive:

Ultrasound / CT / MRI – abscess, malignancy, internal organ pathology

Bone marrow aspiration – in suspected hematological malignancies

Autoimmune Markers – ANA, RF, ANCA for autoimmune fevers

PCR Tests – for viral infections like COVID-19, CMV, EBV

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Tuberculin Skin Test / IGRA – latent or extrapulmonary TB

Lumbar puncture – if meningeal signs present

## ◆ **5. Fever of Unknown Origin (FUO)**

### ◆ **Definition:**

Fever  $>38.3^{\circ}\text{C}$  on several occasions, lasting  $>3$  weeks, and undiagnosed after 3 outpatient visits or 3 days in hospital.

### ◆ **Categories:**

Infectious causes – TB, abscess, endocarditis

Inflammatory diseases – RA, SLE, vasculitis

Neoplastic causes – lymphoma, leukemia

Miscellaneous – drug fever, factitious fever

### ◆ **Workup Approach:**

Repeat detailed history and examination

Serial CBC, ESR, imaging, and cultures

Consider PET-CT in refractory cases

## ◆ **6. Pediatric Considerations**

Fever often is a sign of minor viral illness but must not be underestimated

Important signs: poor feeding, lethargy, bulging fontanelle, toxic appearance

Common causes: viral infections, UTI, pneumonia, occult bacteremia

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Workup: CBC, CRP, urinalysis, chest X-ray, LP (if meningitis suspected)

In neonates, any fever is an emergency → full septic workup

## ◆ **7. Ayurvedic Perspective**

### ◆ Concept of Jwara:

Considered the "king of diseases" (Rogapati)

Manifestation of vitiated doshas affecting Agni

Classified based on doshic predominance:

Vataj Jwara: dry mouth, restlessness, light fever

Pittaj Jwara: burning sensation, high-grade fever, thirst

Kaphaj Jwara: heaviness, mild fever, cough

### ◆ **Diagnostic Indicators:**

Nadi Pariksha (pulse examination)

Mala-Mutra (stool and urine features)

Jihva (tongue coating)

Jwara Poorva-Roopas (prodromal signs)

### ◆ **Ayurvedic Laboratory Insight:**

Conceptual correlation with Dhatwagni, Rasa Dusti, and Ama Nirmiti

Panchakarma purification indicated post-Agni stabilization



## ◆ 8. Case-Based Illustrations

1. Case 1: Acute Fever with Thrombocytopenia

Diagnosis: Dengue

Key investigations: CBC, Dengue NS1, LFT

2. Case 2: Subacute Fever, Weight Loss, Night Sweats

Diagnosis: Tuberculosis

Investigations: CBC, ESR, CXR, CBNAAT

3. Case 3: Child with Fever and Vomiting

Diagnosis: UTI

Investigations: Urine analysis, Urine culture

## ◆ 9. Red Flag Signs in Fever

High-grade persistent fever  $>104^{\circ}\text{F}$

Altered mental status

Signs of meningeal irritation

Hemorrhagic rash or purpura

Hypotension, dehydration

Severe tachypnea or breathlessness

Poor feeding / irritability in children

## ◆ 10. Conclusion

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A patient with fever deserves a rational, structured diagnostic approach. Investigations should be guided by clinical judgment and must avoid indiscriminate testing. Understanding both modern diagnostic tools and traditional insights allows for an integrative, holistic evaluation.